

PATENT ABSTRACTS OF JAPAN

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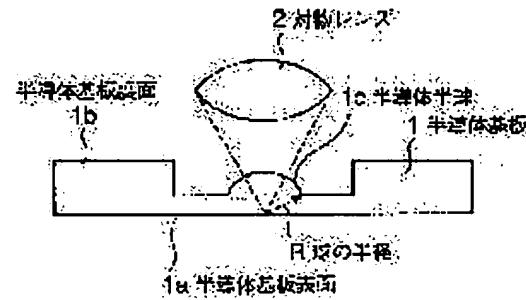
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(54) SEMICONDUCTOR DEVICE, METHOD OF EVALUATING AND ANALYZING SEMICONDUCTOR DEVICE, AND WORKING DEVICE FOR SEMICONDUCTOR DEVICE

(57)Abstract:

PROBLEM TO BE SOLVED: To stably enhance resolution in reverse face analysis, and to allow sure and easy analysis and evaluation for a semiconductor device of which the fineness progresses.

SOLUTION: A desired portion in a reverse face 1b of a semiconductor substrate is worked to form a semiconductor hemisphere 1c in the semiconductor device wherein an integrated circuit is formed in an obverse 1a of the semiconductor substrate. Reverse face analysis of high resolution is conducted using the semiconductor hemisphere 1c as a solid immersion lens.



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(1) **Japanese Patent Application Laid-Open No. 2002-189000****“Semiconductor Device, Evaluation and Analysis Method of a Semiconductor Device, and Processing Unit of a Semiconductor Device”**

5 The following is English translation of an extract from the above-identified document relevant to the present application.

While a grinding tool 3 having a groove 3a configured into a semicircular shape in cross section is pressed against a reverse surface of semiconductor substrate 1b and rotated 10 with a normal that runs through the centre of a trench 3 as an axis, a semiconductor substrate is grinded by abrasive such as diamond slurry and diamond paste.

As a result, a convex semiconductor hemisphere 1c is formed along a semicircular trench 3a, having a rotation axis in the centre (see Fig 3 (a)).

Depending on whether a semiconductor hemisphere 1c is a semispherical solid immersion 15 lens as shown in Fig 1 or a super semispherical solid immersion lens as shown in Fig. 2, the size and shape of a trench 3a of grinding tool 3 is selected and the depth for grinding is adjusted.